

POROUS BIODEGRADABLE POLYMERIC MATERIALS FOR CELL TRANSPLANTATION

ABSTRACT OF THE DISCLOSURE

Polymeric materials are used to make a pliable, non-toxic, injectable porous template for vascular ingrowth. The pore size, usually between approximately 100 and 300 microns, allows vascular and connective tissue ingrowth throughout approximately 10 to 90% of the matrix following implantation, and the injection of cells uniformly throughout the implanted matrix without damage to the cells or patient. The introduced cells attach to the connective tissue within the matrix and are fed by the blood vessels. The preferred material for forming the matrix or support structure is a biocompatible synthetic polymer which degrades in a controlled manner by hydrolysis into harmless metabolites, for example, polyglycolic acid, polylactic acid, polyorthoester, polyanhydride, or copolymers thereof. The rate of tissue ingrowth increases as the porosity and/or the pore size of the implanted devices increases. The time required for the tissue to fill the device depends on the polymer crystallinity and is less for amorphous polymers versus semicrystalline polymers. The vascularity of the advancing tissue is consistent with time and independent of the biomaterial composition and morphology.